

**REMARKS**

Applicants would first like to thank Examiners Tran and Wang for granting the telephonic interview of September 15, 2003, in which all pending rejections were discussed. Present during the interview were Examiner Tran, Examiner Wang, assignee's representative attorney Marnie Matt, inventor Dr. Nicholas Abbott and assignee's attorney Robert N. Young. During the interview, Examiner Tran, Examiner Wang and applicants came to an understanding as to claim amendments and statements that would help place the claims in condition for allowance.

Claims 1 and 3-16 are currently pending in this application. Claim 1 has been amended without prejudice. Claim 1 has been amended to explicitly recite what was already inherent in the claim. Because the amendment makes explicit what was inherent and does not change the scope of the claims, the claim amendment is not narrowing and accordingly the claims are entitled to the same scope either literally or under the Doctrine of Equivalents.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier. Support for the amendment to claim 1 can be found throughout the application as originally filed, including, but not limited to, page 18, lines 2-5. Amendment of the claim is supported by the application as filed, does not add new matter, and is otherwise proper. Applicants respectfully request entry of this amendment in its entirety.

In view of the forgoing amendments and following remarks, applicants respectfully request reconsideration of the application and claims and submit that the application is in condition for allowance.

**I. Withdrawn Rejections**

Applicants thank the Examiner for withdrawing the following rejections:

Rejection of claims 1, 3-6 and 14 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,277,489;

Rejection of claims 1, 3-7 and 14 under 35 U.S.C. § 102(f);

Rejection of claims 8-9 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,284,197 in view of U.S. Patent No. 5,712,103;

Rejection of claims 10-13 and 15 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,284,197; and

Rejection of claims 17-18 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,284,197 in view of U.S. Patent No. 5,712,103 further in view of U.S. Patent No. 4,628,037.

## **II. Claim Rejections – 35 U.S.C. § 112**

In the Office Action, claims 1 and 16 were rejected for allegedly being indefinite for reciting apparently contradictory elements. Examiner Wang indicated in the telephonic conference of September 15, 2003, that the rejection was being withdrawn *sua sponte* and applicants would like to thank the Examiner for withdrawing this rejection. Accordingly, applicants believe no response is required to this rejection.

Claim 16 was also rejected for reciting the relative term “substantially.” Applicants respectfully submit that one skilled in the art would understand the meaning of substantially as used in claim 16 based on the plain and ordinary meaning of the term, which is “being largely but not wholly that which is specified.” Merriam Webster’s Collegiate Dictionary, Tenth Ed. 1997, p. 1174 (a copy of which is enclosed). As stated in the MPEP, “[t]he fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. § 112, second paragraph.” MPEP § 2173.05(b). Moreover, in every case discussed in the MPEP, the term “substantially” was held to be definite. MPEP § 2173.05(b) under heading “D. ‘Substantially’”. Accordingly, applicants respectfully request that the Examiner withdraw this rejection.

## **III. Claim Rejections – 35 U.S.C. § 102**

In the Office Action, claims 1 and 3-16 were rejected “as being anticipated by Abbott *et al.* (U.S. Patent 6,284,197 B1).” Specifically, the Office Action states that “Abbott *et al.* do teach 1) providing a substrate that has a depression; 2) any pathogen bound to the

substrate ‘at least partially occupies the depression’; and 3) ‘substantially all the binding agent is located in the depressions of the detection region.’”

Applicants respectfully submit that the Abbott *et al.* reference cannot anticipate the presently claimed methods because it fails to teach or suggest all the claim elements. Specifically, Abbott *et al.* fails to teach or suggest the specific relationship in size between the depressions of the detection surface and the pathogen to be detected as claimed in the present methods.

The present methods use a specific substrate with a detection region having particularly sized depressions that are selected in size based on the desired pathogen to be detected and are also designed to “align a liquid crystal.” Specifically, the depressions on the substrate have a “width... on the order of the size of the selected pathogen;” and are “selected in size to... be occupied by the selected pathogen[.]” As such, the width and depth dimensions of the depressions are tied to the pathogen being detected and will inherently vary depending upon the size of the specific pathogen.

Although Abbott *et al.* teaches that a substrate can be patterned, nowhere does it teach or suggest the size relationship between the depressions and biomolecule to be detected as claimed in the present methods. Specifically, nowhere does Abbott *et al.* teach or suggest selecting the size of the depressions to perform the dual role of aligning liquid crystal and be occupied by the specifically selected pathogen. Nowhere does Abbott *et al.* teach or suggest any depression on a detection substrate which has a width “on the order of the size of the selected pathogen.” And nowhere does Abbott *et al.* teach or suggest varying the size of the patterns on the substrate based on the size of the biomolecule to be detected. Accordingly, Abbott *et al.* fails to teach or suggest each and every element of the presently claimed invention in full detail and cannot anticipate the present methods. Therefore, applicants respectfully request that the Examiner withdraw this rejection.

#### **IV. Claim Rejections – 35 U.S.C. § 103**

In the Office Action, claims 1, 8-9, 14 and 16 were also rejected for allegedly being obvious over Alberti *et al.* (Infection and Immunity, 1996, 64(11):4276-4732) and Woolverton *et al.* (U.S. Patent No. 6,171,802). However, even if it were proper to combine

the two cited references, the combination of Alberti *et al.* with Woolverton *et al.* still does not state a proper *prima facie* case of obviousness because these two references fail to teach or suggest each and every element of the presently claimed invention. Specifically, neither Alberti *et al.* nor Woolverton *et al.* teach or suggest a substrate having depressions which have a width and depth selected in size to align a liquid crystal, to be occupied by the selected pathogen, and which have a width on the order of the size of the selected pathogen that is to be detected. The Office cites Alberti *et al.* as using microtiter plate wells. However, even the smallest wells of microtiter plates are orders of magnitude larger than a single pathogen and are capable of holding thousands, if not millions, of even the largest pathogen within the width of the microtiter well. As is well known in the art, large pathogen dimensions are on the order of micrometers ( $10^{-6}$  m) whereas the dimensions of microtiter plate wells are on the order of millimeters ( $10^{-3}$  m). Furthermore, the wells of microtiter plates would be merely capable of containing liquid crystals-they are simply too large in scale to align liquid crystals. Woolverton *et al.* does not overcome this deficiency because it also fails to teach or suggest using depressions having the claimed characteristics.


Because the references cited in the Office Action fail to teach or suggest all of the claim elements of the present invention, the rejection must fail. Accordingly, applicants respectfully request that the Examiner withdraw these rejections.

### CONCLUSION

In view of the above remarks and amendments, it is respectfully submitted that this application is in condition for allowance. Early notice to that effect is earnestly solicited. The Examiner is invited to telephone the undersigned at the number listed below if the Examiner believes such would be helpful in advancing the application to issue. The Examiner is also invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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